

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
26 May 2005 (26.05.2005)

PCT

(10) International Publication Number  
**WO 2005/048192 A1**

(51) International Patent Classification<sup>7</sup>: **G06T 5/00**

(21) International Application Number:

PCT/GB2004/004741

(22) International Filing Date:

10 November 2004 (10.11.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0326167.4 10 November 2003 (10.11.2003) GB

(71) Applicant (for all designated States except US):

**METROPOLIS DATA CONSULTANTS LIMITED**  
[GB/GB]; 25 Hale Street, Cambridge, Cambridgeshire CB4 3BZ (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BOBSON, Michael, P.** [GB/GB]; 8 Herbert Street, Cambridge CB4 1AQ (GB). **MCLACHLAN, Charles I** [GB/GB]; 25 Hale Street, Cambridge CB4 3BZ (GB).

(74) Agent: **GARRATT, Peter**; Mathys & Squire, 120 Holborn, London EC1N 2SQ (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

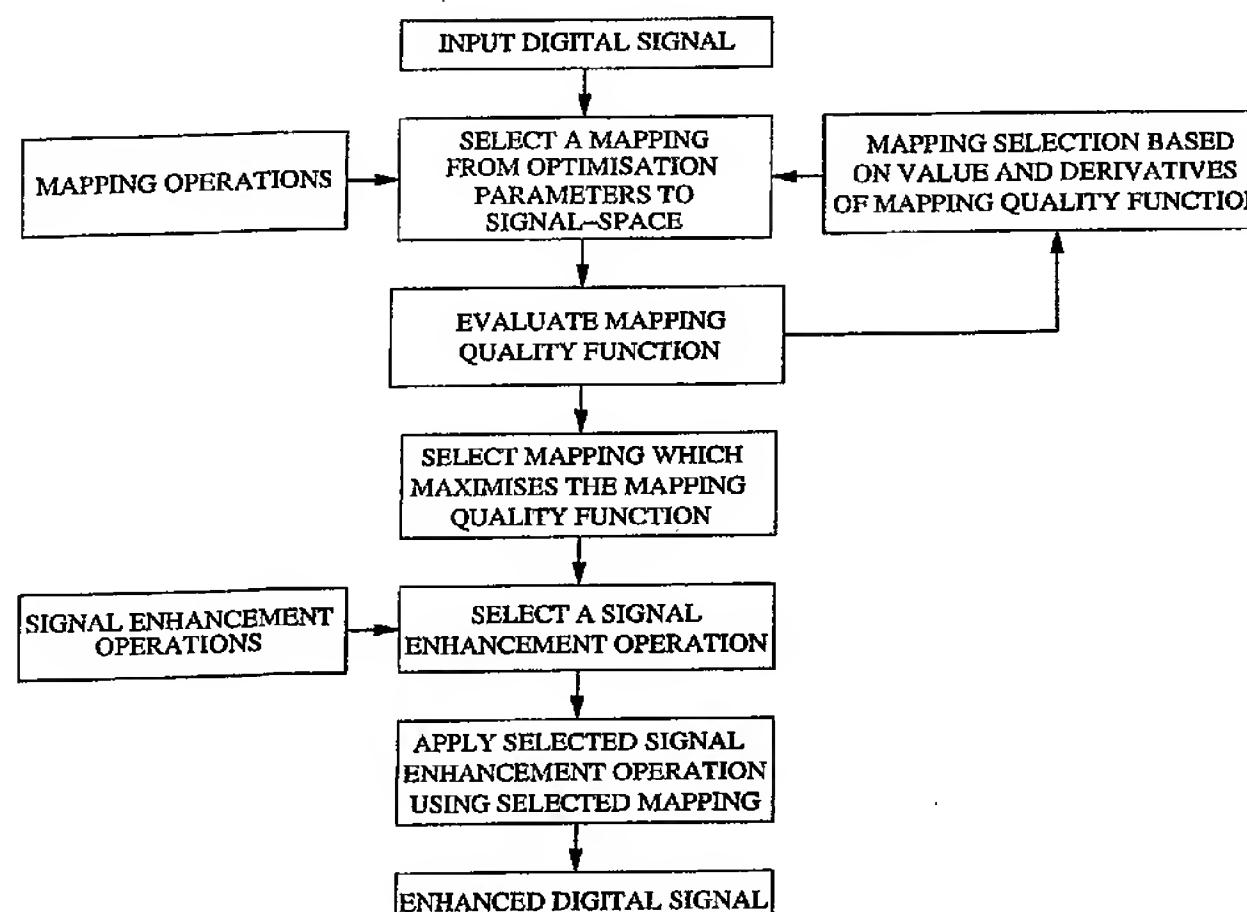
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: DIGITAL SIGNAL PROCESSING WITH IMPROVED MAPPING



(57) **Abstract:** A method of performing a signal enhancement operation on a digital input signal is described. The method produces a best estimate of a true signal which the digital input signal is assumed to represent. The method involves deriving a plurality of candidate mappings, each defining a mapping between the signal domain of the digital input signal and an alternative optimisation domain, each signal in the signal domain corresponding to a set of optimisation parameters in the optimisation domain. For each candidate mapping, an indicator of the quality of the candidate mapping is calculated for a set of optimisation parameters in the optimisation domain of the candidate mapping. The highest-quality mapping is then selected in dependence on the calculated indicators, and the set of optimisation parameters generated for the selected mapping is selected. The selected mapping is applied to the selected set of optimisation parameters to produce an enhanced digital signal. The method finds application in a variety of signal processing fields including image processing, and is applicable for example, to image processing tasks such as image enhancement or image reconstruction.

WO 2005/048192 A1

**WO 2005/048192 A1**



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*